

WHAT IS CLAIMED IS:

1. An absorbent article comprising:
a substantially impermeable backsheet;
a permeable topsheet;
5 an absorbent core disposed between the substantially impermeable
backsheet and permeable topsheet; and
a fluid handling layer,
whereby the fluid handling layer is disposed between the
permeable topsheet and the absorbent core, and
10 wherein the absorbent article has a third insult Strikethrough of less
than about 45 seconds, and a third insult Rewet of less than about 35
grams.
2. The absorbent article of claim 1, wherein the fluid handling
layer is comprised of a polyurethane foam made from at least an aliphatic
15 isocyanate.
3. The absorbent article of claim 1, wherein the fluid handling
layer is a foam fluid handling layer comprised of at least one polymer
selected from the group consisting of a polyurethane, a polyethylene, a
polypropylene, a polyacrylic, a polyamide, a polyvinyl chloride, an epoxy,
20 a polystyrene, a melamine-formaldehyde polymer, and combinations
thereof.
4. The absorbent article of claim 1, wherein the fluid handling
layer is comprised of at least a polyurethane polymer foam or a melamine-
formaldehyde polymer foam material.
- 25 5. The absorbent article of claim 3, wherein the polymer is a
melamine-formaldehyde polymer.

6. The absorbent article of claim 1, wherein the fluid handling layer is comprised of a foam has a density within the range of from about 20 to about 700 grams/liter.

7. The absorbent article of claim 1, wherein the fluid handling layer is comprised of a foam that additionally comprises a stabilizing agent.

8. The absorbent article of claim 1, wherein the fluid handling layer is comprised of a foam that additionally comprises at least one additive selected from the group consisting of surfactants, fillers, additives, or combinations thereof.

9. The absorbent article of claim 8, wherein the additive is selected from the group consisting of a flame retardant, a reinforcing agent, an auxiliary blowing agent, a medicament, a fragrance, a colorant, a cleaner, an abrasive, and combinations thereof.

10. The absorbent article of claim 1, wherein the absorbent article is selected from the group consisting of a diaper, an incontinent brief, a training pant, a diaper holder, a diaper liner, a sanitary napkin, a hygienic garment, a swimming diaper, or combinations thereof.

11. The absorbent article of claim 1, wherein the third insult Strikethrough is less than about 40 seconds.

12. The absorbent article of claim 11, wherein the third insult Strikethrough is less than about 35 seconds.

13. The absorbent article of claim 1, wherein the third insult Rewet is less than about 30 grams.

14. The absorbent article of claim 13, wherein the third insult
Rewet is less than about 25 grams.

15. The absorbent article of claim 2, wherein the aliphatic
isocyanate is at least one isocyanate selected from the group consisting of
5 hexamethylene diisocyanate, hexamethylene triisocyanate, bicycloheptane
triisocyanate, undecanetriisocyanate, lysine ester triisocyanate, isophorone
diisocyanate, dicyclohexylmethane diisocyanate, methylcyclohexane
diisocyanate, dimethylcyclohexane diisocyanate, xylylene diisocyanate,
tetramethylxylylene diisocyanate, their dimers, their trimers, and mixtures
10 thereof.

16. The absorbent article of claim 15, wherein the aliphatic
isocyanate is hexamethylene diisocyanate.

17. The absorbent article of claim 2, wherein the aliphatic
isocyanate is reacted with a polyester alcohol.

15 18. The absorbent article of claim 17, wherein the polyester
alcohol is a polyetherol having a molecular weight within the range of
from about 1,000 to about 6,000 g/mol, and a functionality of from about 2
to about 8.

19. The absorbent article of claim 17, wherein the polyurethane
20 is complexed with a complexing agent selected from the group consisting
of ethylenimine, polyethylenimine, polyvinylamine, carboxy-methylated
polyethylenimines, phosphono-methylated polyethylenimines,
quaternized polyethylenimines and/or dithiocarbamitized
polyethylenimines.

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20. The absorbent article of claim 19, wherein the complexing agent is a polyethylenimine having a molecular weight within the range of from about 500 to about 30,000 g/mol.

21. The absorbent article of claim 17, wherein the polyester alcohol is selected from the group consisting of polyether polyols, ethylene glycol, propylene glycol, glycerol, hexanetriol, triethanolamine, ethylene oxide, propylene oxide, butylene oxide, polytetramethylene ether glycol, lactone-type polyester polyols, polyol compounds obtained by condensing a dihydric or trihydric alcohol with s hydroxycarboxylic acid, polyol compounds obtained by condensing dicarboxylic acids with diols, condensed polyester polyols obtained by adding acid anhydrides with diols, and mixtures thereof.

22. The absorbent article of claim 17, wherein the aliphatic isocyanate and polyester alcohol are reacted in the presence of a catalyst selected from the group consisting of tin diacetate, tin dioctoate, dialkyltin dilaurate, triethylamine, pentamethyldiethylenetriamine, bis(dimethylaminoethyl) ether, 1,2-dimethylimidazole, dimethylcyclohexylamine, dimethylbenzylamine, triethylenediamine, and mixtures thereof.

23. The absorbent article as claimed in claim 2, wherein the foam has a sink time of more than 20 seconds.

24. The absorbent article as claimed in claim 2, wherein the foam has a liquid up-take of from about 10 to about 30 grams.

25. The absorbent article as claimed in claim 2, wherein the foam has a tensile strength of from about 25 to about 100 kPa.

26. The absorbent article as claimed in claim 2, wherein the foam has a cell size from the top surface of the foam (cell size A) of from about 400 to about 1,000 μm .

27. The absorbent article as claimed in claim 2, wherein the foam
5 has a cell size from the side surface of the foam (cell size B) of from about 300 to about 550 μm .

28. The absorbent article as claimed in claim 2, wherein the foam has a hole diameter within the range of from about 125 to about 400 μm .

29. The absorbent article as claimed in claim 2, wherein the foam
10 as an absolute value change in basis weight from dry basis weight to wet basis weight of less than about 20 g/m^2 .

30. An absorbent garment comprising:
a substantially impermeable backsheet and a permeable topsheet defining a front waste portion and a rear waste portion, said front waste
15 portion and said rear waste portion cooperating to form a waste opening;
a crotch region formed between the front waste portion and the rear waste portion;
a pair of leg openings on opposed sides of the crotch region;
an absorbent core; disposed between the substantially impermeable
20 backsheet and the permeable topsheet at the crotch region; and
a foam fluid handling layer comprising aliphatic isocyanate,
whereby the foam fluid handling layer is disposed between the permeable topsheet and the absorbent core, and
wherein the absorbent article has a third insult Strikethrough of less
25 than about 45 seconds, and a third insult Rewet of less than about 35 grams.

31. The absorbent article of claim 30, wherein the foam fluid handling layer is a polyurethane foam fluid handling layer made from at least an aliphatic isocyanate.

5 32. The absorbent article of claim 30, wherein the foam fluid handling layer is comprised of at least one polymer selected from the group consisting of a polyurethane, a polyethylene, a polypropylene, a polyacrylic, a polyamide, a polyvinyl chloride, an epoxy, a polystyrene, a melamine-formaldehyde polymer, and combinations thereof.

10 33. The absorbent article of claim 30, wherein the foam fluid handling layer is comprised of at least a polyurethane polymer or a melamine-formaldehyde polymer.

34. The absorbent article of claim 32, wherein the polymer is a melamine-formaldehyde polymer.

15 35. The absorbent article of claim 30, wherein the foam has a density within the range of from about 20 to about 700 grams/liter.

36. The absorbent article of claim 30, wherein the foam additionally comprises a stabilizing agent.

20 37. The absorbent article of claim 30, wherein the foam additionally comprises at least one additive selected from the group consisting of surfactants, fillers, additives, or combinations thereof.

38. The absorbent article of claim 37, wherein the additive is selected from the group consisting of a flame retardant, a reinforcing agent, an auxiliary blowing agent, a medicament, a fragrance, a colorant, a cleaner, an abrasive, and combinations thereof.

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39. The absorbent article of claim 30, wherein the absorbent article is selected from the group consisting of a diaper, an incontinent brief, a training pant, a diaper holder, a diaper liner, a sanitary napkin, a hygienic garment, a swimming diaper, or combinations thereof.

5 40. The absorbent article of claim 30, wherein the third insult ~~Strikethrough~~ is less than about 40 seconds.

41. The absorbent article of claim 40, wherein the third insult ~~Strikethrough~~ is less than about 35 seconds.

10 42. The absorbent article of claim 30, wherein the third insult Rewet is less than about 30 grams.

43. The absorbent article of claim 42, wherein the third insult Rewet is less than about 25 grams.

15 44. The absorbent article of claim 31, wherein the aliphatic isocyanate is at least one isocyanate selected from the group consisting of hexamethylene diisocyanate, hexamethylene triisocyanate, bicycloheptane triisocyanate, undecanetriisocyanate, lysine ester triisocyanate, isophorone diisocyanate, dicyclohexylmethane diisocyanate, methylcyclohexane diisocyanate, dimethylcyclohexane diisocyanate, xylylene diisocyanate, tetramethylxylylene diisocyanate, their dimers, their trimers, and mixtures
20 thereof.

45. The absorbent article of claim 44, wherein the aliphatic isocyanate is hexamethylene diisocyanate.

46. The absorbent article of claim 31, wherein the aliphatic isocyanate is reacted with a polyester alcohol.

47. The absorbent article of claim 46, wherein the polyester alcohol is a polyetherol having a molecular weight within the range of from about 1,000 to about 6,000 g/mol, and a functionality of from about 2 to about 8.

5 48. The absorbent article of claim 46, wherein the polyurethane is complexed with a complexing agent selected from the group consisting of ethylenimine, polyethylenimine, polyvinylamine, carboxy-methylated polyethylenimines, phosphono-methylated polyethylenimines, quaternized polyethylenimines and/or dithiocarbamitized
10 polyethylenimines.

49. The absorbent article of claim 48, wherein the complexing agent is a polyethylenimine having a molecular weight within the range of from about 500 to about 30,000 g/mol.

15 50. The absorbent article of claim 46, wherein the polyester alcohol is selected from the group consisting of polyether polyols, ethylene glycol, propylene glycol, glycerol, hexanetriol, triethanolamine, ethylene oxide, propylene oxide, butylene oxide, polytetramethylene ether glycol, lactone-type polyester polyols, polyol compounds obtained by condensing a dihydric or trihydric alcohol with s hydroxycarboxylic acid,
20 polyol compounds obtained by condensing dicarboxylic acids with diols, condensed polyester polyols obtained by adding acid anhydrides with diols, and mixtures thereof.

25 51. The absorbent article of claim 46, wherein the aliphatic isocyanate and polyester alcohol are reacted in the presence of a catalyst selected from the group consisting of tin diacetate, tin dioctoate, dialkyltin dilaurate, triethylamine, pentamethyldiethylenetriamine,

bis(dimethylaminoethyl) ether, 1,2-dimethylimidazole,
dimethylcyclohexylamine, dimethylbenzylamine, triethylenediamine, and
mixtures thereof.

52. The absorbent article as claimed in claim 31, wherein the
5 foam has a sink time of more than 20 seconds.

53. The absorbent article as claimed in claim 31, wherein the
foam has a liquid up-take of from about 10 to about 30 grams.

54. The absorbent article as claimed in claim 31, wherein the
foam has a tensile strength of from about 25 to about 100 kPa.

10 55. The absorbent article as claimed in claim 31, wherein the
foam has a cell size from the top surface of the foam (cell size A) of from
about 400 to about 1,000 μm .

15 56. The absorbent article as claimed in claim 31, wherein the
foam has a cell size from the side surface of the foam (cell size B) of from
about 300 to about 550 μm .

57. The absorbent article as claimed in claim 31, wherein the
foam has a hole diameter within the range of from about 125 to about 400
 μm .

20 58. The absorbent article as claimed in claim 31, wherein the
foam has an absolute value change in basis weight from dry basis weight to
wet basis weight of less than about 20 g/m^2 .

59. A method of preparing an absorbent article comprising:
providing a topsheet material and a backsheet material;

disposing between the topsheet and backsheet materials an
absorbent core;

disposing between the topsheet and the absorbent core a fluid
transport layer ,

5 whereby the absorbent article has a third insult Strikethrough of
less than about 45 seconds, and a third insult Rewet of less than about 35
grams.

60. The method of claim 59, wherein the fluid handling layer is a
polyurethane foam fluid handling layer made from at least an aliphatic
10 isocyanate.

61. The method of claim 59, wherein the fluid handling layer is a
foam fluid handling layer comprised of at least one polymer selected from
the group consisting of a polyurethane, a polyethylene, a polypropylene, a
polyacrylic, a polyamide, a polyvinyl chloride, an epoxy, a polystyrene, a
15 melamine-formaldehyde polymer, and combinations thereof.

62. The method of claim 59, wherein the fluid handling layer is
comprised of at least a polyurethane polymer foam or a melamine-
formaldehyde polymer foam material.

63. The method of claim 61, wherein the polymer is a melamine-
20 formaldehyde polymer.

64. The method of claim 59, wherein the fluid handling layer is
comprised of a foam having a density within the range of from about 20 to
about 700 grams/liter.

65. The method of claim 59, wherein the fluid handling layer
25 comprises a foam that additionally comprises a stabilizing agent.

66. The method of claim 59, wherein the fluid handling layer comprises a foam that additionally comprises at least one additive selected from the group consisting of surfactants, fillers, additives, or combinations thereof.

5 67. The method of claim 66, wherein the additive is selected from the group consisting of a flame retardant, a reinforcing agent, an auxiliary blowing agent, a medicament, a fragrance, a colorant, a cleaner, an abrasive, and combinations thereof.

10 68. The method of claim 59, wherein the absorbent article is selected from the group consisting of a diaper, an incontinent brief, a training pant, a diaper holder, a diaper liner, a sanitary napkin, a hygienic garment, a swimming diaper, or combinations thereof.

69. The method of claim 59, wherein the third insult Strikethrough is less than about 40 seconds.

15 70. The method of claim 69, wherein the third insult Strikethrough is less than about 35 seconds.

71. The method of claim 59, wherein the third insult Rewet is less than about 30 grams.

20 72. The method of claim 71, wherein the third insult Rewet is less than about 25 grams.

73. The method of claim 60, wherein the aliphatic isocyanate is at least one isocyanate selected from the group consisting of hexamethylene diisocyanate, hexamethylene triisocyanate, bicycloheptane triisocyanate, undecanetriisocyanate, lysine ester triisocyanate, isophorone diisocyanate, dicyclohexylmethane diisocyanate, methylcyclohexane

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diisocyanate, dimethylcyclohexane diisocyanate, xylylene diisocyanate, tetramethylxylylene diisocyanate, their dimers, their trimers, and mixtures thereof.

5 74. The method of claim 73, wherein the aliphatic isocyanate is hexamethylene diisocyanate.

75. The method of claim 60, wherein the aliphatic isocyanate is reacted with a polyester alcohol.

10 76. The method of claim 75, wherein the polyester alcohol is a polyetherol having a molecular weight within the range of from about 1,000 to about 6,000 g/mol, and a functionality of from about 2 to about 8.

15 77. The method of claim 75, wherein the polyurethane is complexed with a complexing agent selected from the group consisting of ethylenimine, polyethylenimine, polyvinylamine, carboxy-methylated polyethylenimines, phosphono-methylated polyethylenimines, quaternized polyethylenimines and/or dithiocarbamitized polyethylenimines.

78. The method of claim 77, wherein the complexing agent is a polyethylenimine having a molecular weight within the range of from about 500 to about 30,000 g/mol.

20 79. The absorbent article of claim 75, wherein the polyester alcohol is selected from the group consisting of polyether polyols, ethylene glycol, propylene glycol, glycerol, hexanetriol, triethanolamine, ethylene oxide, propylene oxide, butylene oxide, polytetramethylene ether glycol, lactone-type polyester polyols, polyol compounds obtained by
25 condensing a dihydric or trihydric alcohol with a hydroxycarboxylic acid,

polyol compounds obtained by condensing dicarboxylic acids with diols, condensed polyester polyols obtained by adding acid anhydrides with diols, and mixtures thereof.

5 80. The method of claim 75, wherein the aliphatic isocyanate and polyester alcohol are reacted in the presence of a catalyst selected from the group consisting of tin diacetate, tin dioctoate, dialkyltin dilaurate, triethylamine, pentamethyldiethylenetriamine, bis(dimethylaminoethyl) ether, 1,2-dimethylimidazole, dimethylcyclohexylamine, dimethylbenzylamine, triethylenediamine, and
10 mixtures thereof.

 81. The method as claimed in claim 60, wherein the foam has a sink time of more than 20 seconds.

 82. The method as claimed in claim 60, wherein the foam has a liquid up-take of from about 10 to about 30 grams.

15 83. The method as claimed in claim 60, wherein the foam has a tensile strength of from about 25 to about 100 kPa.

 84. The method as claimed in claim 60, wherein the foam has a cell size from the top surface of the foam (cell size A) of from about 400 to about 1,000 μm .

20 85. The method as claimed in claim 60, wherein the foam has a cell size from the side surface of the foam (cell size B) of from about 300 to about 550 μm .

 86. The method as claimed in claim 60, wherein the foam has a hole diameter within the range of from about 125 to about 400 μm .

87. The method as claimed in claim 60, wherein the foam as an absolute value change in basis weight from dry basis weight to wet basis weight of less than about 20 g/m².

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